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# THE OVERCUTS ON THE PHAISTOS DISC

In a previous article in Kadmos[1] I suggested that it is unwise to ignore the evidence of Della Seta[2] on the sequence of the inscriber's actions. It seems worth while to review and, if possible, to supplement that evidence.

To illustrate the details discussed here drawings[3] have been marked with arrows indicating overcuts. Strictly speaking the word 'overcut' should perhaps be applied only to the case where an impressed sign or an incised line overlaps or cuts across another, but the term has frequently been used — as it is here — to describe any kind of interference or distortion caused by the pressure or pull of a subsequent mark. The arrows are drawn so that they point from the superior (later) mark towards the inferior (earlier) one. Overcuts identified by Della Seta are indicated by rings, and I have included all of these although I think that in one or two cases Della Seta was mistaken.

The drawings present the evidence in a convenient form, but they must be treated with caution. The symbols and terms used may be misleading because they give a definite appearance to what are in some cases doubtful decisions. Interpretation of clues to the relationship between intersecting or contiguous marks on clay is difficult, especially when judgment is based on photographs, which vary greatly and which cannot in any case give much indication of depth. Where two signs intersect one cannot automatically assume that the intact or prevailing line is the later one — the overcut. For example, if a deeply cut sign is overlapped by a shallower one, the line of the former may prevail; on the other hand an overlapping sign may carry down with it part of the outline or inner detail of the preceding sign. Pressure, according to the

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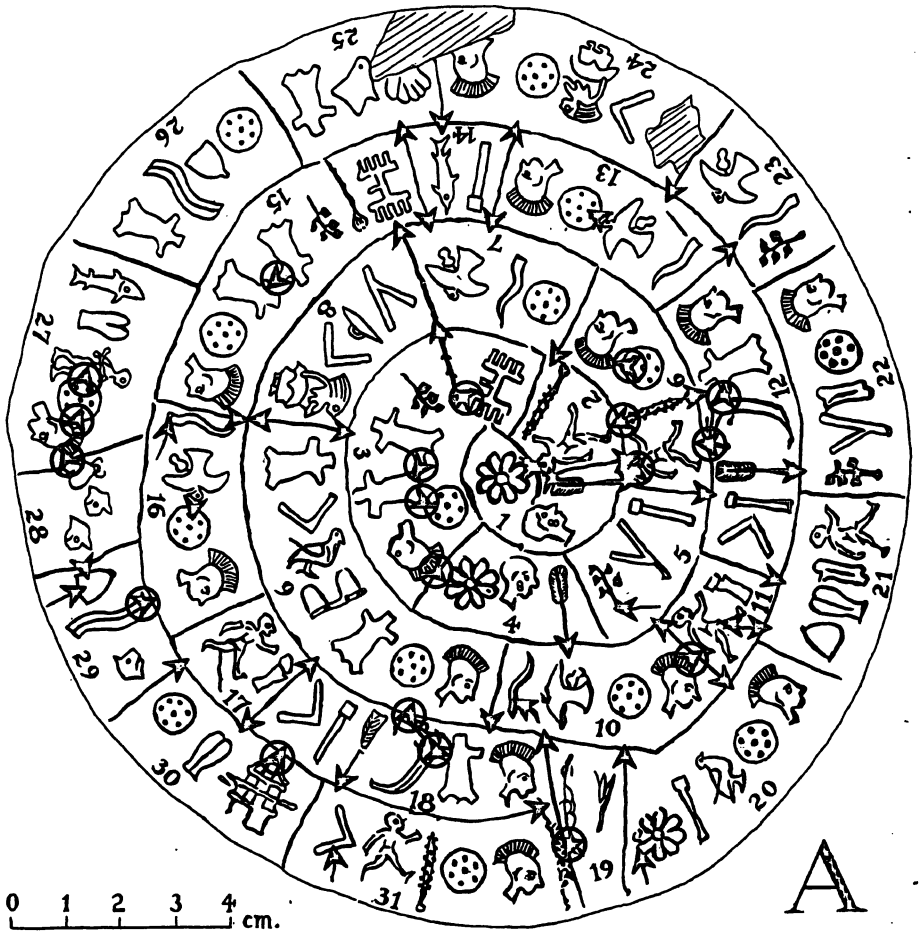
1 The Imprinting of the Phaistos Disc, Kadmos 15, 1976, 1—17

2 A. Della Seta, Il Disco di Phaistos, RRAL, class. sc. mor. stor. e fil., 18, ser. 5, 1909, 297—367

3 I am greatly indebted to the editor, Mr Brice, who kindly prepared the drawings and who checked some details for me on the disc itself in Heraklion.

direction in which it is applied, can cause opposite effects: a sign impressed near an incised line can either squeeze the groove, making it narrower, or pull against it, making it broader. Because of these complications it is hazardous to attach great importance to individual cases. The best guide is an accumulation of consistent indicators.

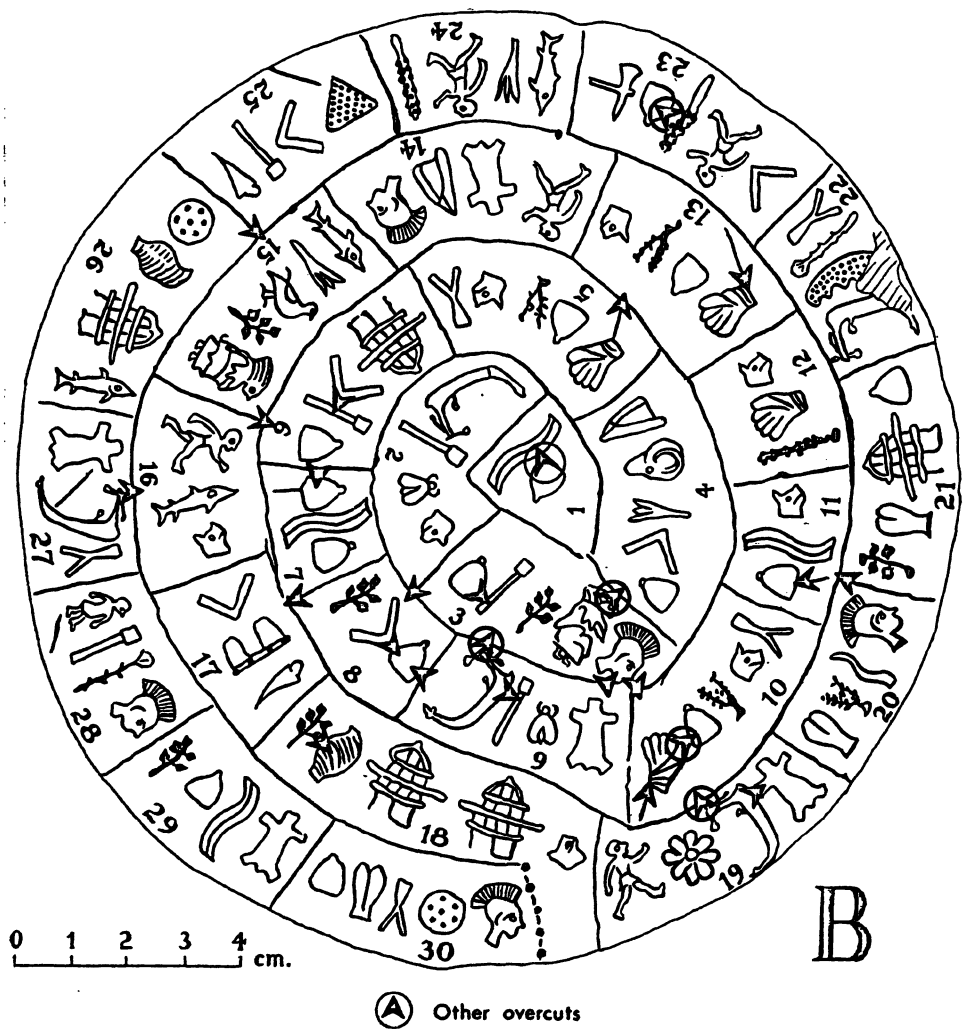
The drawings speak for themselves, and it would be tedious to discuss every case where one mark appears to affect another, but some comments may be useful. I shall deal in turn with the spiral guide-lines, the dividers between 'words', the subscript strokes, and the stamped signs.




Ⓐ Overcuts remarked by Della Seta

## Guide-lines

There is general agreement with Pernier's opinion that on both sides the spiral guide-line was incised first and that it began at the periphery and was drawn towards the centre.[4] Pernier, studying the disc itself, noted both minor divergencies on the route and tiny ridges at the side of the groove as proofs of the direction taken by the stylus, but even the student of photographs may detect an obvious indication in the abrupt distortion at A 20 and B 19, where the line turns into the inner ring with consequent distortions at A 10 and A 5, B 10 and B 4. Had the




[4] L. Pernier, Il Disco di Phaestos, Ausonia 3, 1909, 255—302, esp. 272—3.

spiral started from the centre a much smoother curve would have resulted, though the outer ring would hardly have been as successfully delineated as it is.[5]

The spiral began from the top of the radial line which is distinguished by five dots (A 31, B 30).[6] On side B the intersection is obliterated by a dot, but on side A there can be no doubt that the spiral cuts the radial line, which proves that the radial was drawn first. The dots appear to have been put in after the radial was incised and they were made with a blunt, rounded instrument.[7] A similar dot is to be seen in A 1 between the rosette and the corner of the field. This spot marks the centre of the roughly circular disc more precisely than the rosette itself. The corresponding central point in B 1 is in the right-angled corner above the mallet in B 2, but whether the slight mark which is perceptible there is artificial or accidental is hard to determine. A mark at the centre would certainly have provided the maker with a convenient starting point or goal.

The spiral line clearly provided a guide-line for the text, and that it was incised before the impressions were stamped is put beyond doubt by the numerous places where they cut or otherwise affect the line. Examples are understandably rare in the outer circuit, where the inscriber had the wide baseline at the edge of the disc, but we note interference caused by the palanquin in A 30, by the wave in A 29, and by the ship in B 27 and B 19. Moving into the inner circuits on side A, we find in A 18 and A 12 the ship cutting the line above and the fan cutting the line below, and in A 6 the sceptre cutting the lines below and above. In the interior of side B, where there is less crowding, the only places where the spiral is cut by a stamp are B 9, where the ship cuts the line above, and B 3, where the crested head cuts the line below (another doubtful case, not marked, is B 6, where the palanquin may impinge on the line above). We may reasonably conclude that when the maker

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5 A more complex, and in my view wholly unconvincing, scheme involving a series of coils drawn anti-clockwise is proposed by H. D. Ephron, Hygieia Tharso and Iaon: The Phaistos Disk, HSCP 66, 1962, 1—91, esp. 7—12.

6 Pernier and Evans correctly state that there are five dots, but unfortunately the drawing in Scripta Minoa I shows only four on side B. The fifth and lowest dot is indeed almost obliterated by wear at the edge of the disc. The draftsman's omission has generated its own myth: Alice E. Kober, The Minoan Scripts: fact and theory, AJA 52, 1948, p. 87, suggested that the disc represents sides 4 and 5 of an antique equivalent of the long-playing record. The error is repeated by S. Davis, The Decipherment of the Minoan Linear A and Pictographic Scripts, p. 88.

7 Perhaps the other end of the stylus used for incising the lines. See my previous article for the theory that a stylus-type handle may have been used for manipulating the dies.

began to impress his signs he had guide-lines both above and below the site of the impression. Whether the spiral line was complete before he started or was drawn piecemeal cannot be determined with certainty. If the stamping was dextrograde, the spiral, since it was drawn from the periphery, must have been complete; if the stamping was sinistrograde, it is probable that the spiral was complete and it must in any case have been one circuit ahead of the stamping, as overcuts on the upper line prove. Della Seta correctly observed that the spiral was drawn in a series of strokes, not continuously, but this does not prove, as he claimed, that the maker alternated between drawing a section of the spiral and stamping a passage of text; it proves only that he lifted his stylus or finger-nail and changed direction, which he would naturally do when inscribing a line of this length and complexity. There is, however, one qualification to the conclusion that the spiral was present above and below each impression at the time of stamping: in A2 it looks as if the upper line cuts the face of the running man. This exception, if it is one, does not invalidate the general rule because it appears that the line which closes the top of the field A2 was an addition to the true end of the spiral which lies above the comb in A3. A similar procedure may have been followed in enclosing B1.

## Dividers

The next problem is the relationship between the radial lines or 'word dividers' and the spiral line. Here the evidence is plentiful and beyond dispute. Frequent cuts into the spiral line — above, below, and both together — prove that the dividers were incised after the spirals were inscribed. Notable, however, is the fact that on side B the dividers were incised with greater care than on side A and cuts into the spiral are rarer.

A more difficult problem to solve is the relationship between the dividers and the impressions in the separate fields or 'words'. Here reference must be made to the popular 'net' theory according to which the scribe marked the disc with a network of lines delimiting the fields before he began stamping. This theory is a necessary companion of the dextrograde hypothesis because it explains cases where a sign cuts the divider to the right of it (A3, A10), but it appeals also to those who are impressed by the order and symmetry of the two inscriptions. It is however one thing to recognize the neatness and precision of the operator and quite another to speculate about the difficulties which he may have had to solve in fitting his text into these spaces. It is surely presumptuous to make guesses about the metrics of an old Anatolian

psalm when we know nothing about the language, let alone the nature or meaning of the text (*pace* numerous decipherers or, more accurately, the single one who could prove to be correct). On the assumption that the maker had to solve a kind of circular crossword puzzle it is supposed that he painstakingly followed a draft or master copy and used the network of lines as a framework for his reproduction.[8] In the case of many inscriptions and texts it is reasonable to assume that an exemplar was copied, but if the maker of the PD was merely transferring his text from a carefully worked-out model he would not have needed a complicated grid; all he had to do was to imitate the sequence and spacing of the original. The grid by itself would have been difficult to copy precisely and it would have increased his problems rather than reduced them by depriving him of flexibility and turning each field into a separate spacing problem. The easier assumption is that the dividers were put in after the impressions were made. Were they inserted after the completion of each individual 'word' or after all the signs had been stamped? There are two reasons for preferring the former alternative. First, the gaps between adjoining signs of different fields are generally wider than the gaps between the signs within the fields, which suggests that the maker was conscious of 'word division' as he went along. Secondly, there appear to be clear cases of signs overcutting dividers (the crested head in A3 and A10; cp. B3, where the same sign overcuts the divider between B9 and B10). These examples support either the sinistrograde hypothesis or the net theory. Cases of dividers cutting signs are evidence against the net theory: in A2 the running man and in A19 the bow are cut by dividers.[9]

## Strokes

In a number of places a short stroke was incised under the sign nearest to the left hand end of a field.[10] In several cases the upper end of the stroke cuts the sign above, indicating that the stroke was added after the sign had been impressed.

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8 E. Grumach, Der Ägäische Schriftkreis, Studium Generale 18, 1965, 742—56, esp. 746.

9 Of the three other cases of this phenomenon which I detect one adjoins the 'corrected' field A28, the second, between B3 and B4, is itself apparently a correction, while the third, between B8 and B9, is dubious and is discussed later.

10 This is not the place to discuss the possible significance of the stroke or thorn, but I observe in passing that commentators on the PD have tended to overlook the possibility of occurrences which have become hard to see or illegible. There is, for example, a distinct trace of this mark in A20 which is not recorded in Evans's copy. More doubtful, but still worth scrutiny, are A24, B1 and B23.

## Signs

The neatness with which the signs were stamped so closely together without impinging on one another is truly amazing and one suspects that this degree of accuracy could have been attained only by long practice. Nevertheless there are a few places where some intrusion is detectable.

Most of the overcuts are on side A, which carries a longer text and more broad signs than side B. The 'word' with the heaviest concentration of occurrences is A 3, where the crested head cuts the divider, the right hand hide cuts the shield and is itself cut by its fellow on the left (Della Seta reported in addition that the comb cuts the lily, but my observation does not confirm this). The least disputable example of an overlap is to be found in A 15, where the left hand hide overcuts the one on the right. On side B there are fewer places where signs are stamped close enough to one another to provide the kind of evidence we seek. Della Seta identified three specimens — in B 1, B 10, and B 23; I submit eight possible additions.

We may now review the evidence and ask whether it points to sinistrograde or dextrograde movement or to a combination of both. In A 27 dextrograde sequence seems certain, and some critics have set this indication above all other clues. But there are unmistakable traces of alterations in A 27 and A 28, and the theory that the procedure exhibited in A 27 was exceptional is at least as credible as the opposite view. On the other hand, elsewhere on both sides, examples which support the right to left hypothesis are numerous. A count of these, which are indicated by arrows pointing to the right in the figures, reveals 14 on side A and 11 on side B.[11] Now every one of the 25 may be open to question, but it is not enough to object that they are individually and collectively unconvincing: if the dextrograde theory is to be upheld, the interpretation of every case must be reversed or interference altogether denied. If the inscriber went from left to right, we might expect at least more ambiguity in the contiguous specimens and some cases which could not be misinterpreted. After lengthy search for evidence of dextrograde movement — apart from A 27, which I shall consider later — I am able to suggest only the following cases. (1) In A 9 the right side of the shield has been squeezed in, but it seems that this was done, not by the crested head, but by an accidental indentation, made perhaps by a finger-nail, which is between the two signs. (2) In

[11] In this count overcuts which involve the base line or the thorn must of course be ignored because they would have been the same in either direction.

B23 Della Seta indicated that the lady overcuts the divider, but some observers consider that, on the contrary, the divider cuts the coiffure of the lady. Grumach[12] pointed out that there are traces of an earlier divider which was overcut by the lady and overlapped by the crested head. If this is correct, the present divider was a subsequent correction and the relationship between the two signs and the original divider supports the sinistrograde theory. (3) In B8 the breast seems to be squeezed by the divider on its right. This is, it seems, the best piece of evidence for dextrograde movement which can be found outside A27. Unfortunately it is far from conclusive. The breast is a sign which is liable to distortion and I cannot convince myself with certainty that it has been cut by the divider. If it has, the sinistrograde theory is not annihilated: instead the assumption that the dividers were inserted immediately after the completion of each 'word' may be mistaken.

Returning to the much-vexed correction in A27 I ask what kind of error, and how many errors, the scribe is likely to have made.[13] There are distinct traces of an expunged divider running through the centre of the shield, which indicates that in its original 'spelling' A27 showed the prisoner next to the divider. The 'word' has apparently been corrected by the addition of two signs, the shield and the crested head, whose cramped positions on reworked clay help to identify them as subsequent insertions. The maker's basic error was, in all probability, the omission of these two signs, but correction would have involved not only shifting the divider but also rearrangement of A28 to allow room for the inserted signs (alternatively he could have rearranged A27, but the three signs — prisoner, scrotum, fish — have shapes which preclude compression; they could not be stacked like the lion's heads). A28 shows unmistakable marks of having been 'rewritten': the surface is disturbed, the divider on the right has been redrawn, and all three signs are in positions which deviate from the normal. The right-hand lion's head has been stamped further to the right than a straight divider would have allowed, the left-hand one is above and to the right of its natural linear position, and the bee is slanted so that its axis does not point directly at the centre of the disc. Clearly the maker was trying to save

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[12] E. Grumach, Die Korrekturen des Diskus von Phaistos, Kadmos 1, 1962, 15—26. Grumach observed a number of corrections and he used them to develop theories about mistakes in the exemplar which the maker of the PD is supposed to have copied. I am not entirely convinced by his 'readings' in the clay, and I think we have enough real problems on the disc itself without struggling with those of a hypothetical archetype.

[13] The correction was first identified and discussed by Della Seta, pp. 309—11.

space, and it is wholly unnecessary to suppose that A 28 was altered because of another 'spelling' mistake. If a calculation is made of the space which the three signs of A 28 would naturally occupy in the outer circuit of the disc, the result is found to coincide with the original size of the field (i.e. from the obliterated divider on the right of the prisoner to the divider on the left of A 29). In A 28 as it now stands we have no clue to the order of stamping, but in A 27 most observers state positively that the shield overlaps the prisoner, and the crested head overlaps the shield and is itself dented either by the divider or by the bee in A 28. There can be no doubt that in this sector the maker was proceeding from left to right. The question is: did he normally go that way or did a special problem induce him to reverse direction at this point? Since almost all the rest of the evidence favours the sinistrograde hypothesis we should consider whether a simple explanation can be found for an exceptional change of direction. What follows is a suggested solution.

In order to add the two accidentally omitted signs to A 27 the natural procedure would have been: (1) to expunge the divider and the signs of A 28; (2) to stamp the missing signs; (3) to restamp the signs of A 28. The second action is likely to have preceded the third for two reasons: the prime aim of the correction was to insert new signs, and the signs of A 28 were compact and adaptable so that they could easily be crammed into a remaining space. The missing signs had to be put in between the prisoner and a blank space, and in such a situation the inscriber is likely to have obeyed the rule of linear sequence, which is the fundamental principle of nearly all forms of writing, whatever the direction: he would have joined the shield to the prisoner and the crested head to the shield. To go sinistroverse he would have had to ignore linear sequence and start in space, leaving a gap on the left wide enough to contain the shield — an awkward manoeuvre which was probably alien to the inscriber. It should be noted that the sequence of actions suggested here involves only one truly dextroverse transition — from the shield to the crested head; we are not confronted with a sequence of three signs proceeding without interruption from left to right.

On my analysis the dextrograde theory is left with only one definite case (shield to crested head in A 27), which may be an exception, and one dubious case (breast to divider in B 8). The sinistrograde theory, on the other hand, is supported by some 25 cases of varying value.[14] My con-

[14] Different figures and the opposite conclusion are presented by R. J. van Meerten, On the Printing Direction of the Phaistos Disc, Statistical Methods in Linguistics, 1975,

clusion is that Della Seta was right in asserting that the evidence of the overcuts shows that the spiral, the dividers, and the signs were inscribed by an operator who normally proceeded from right to left, from the periphery towards the centre.

But this is not an end of the matter because it is still possible that the inscriber went sinistrograde while the reader went dextrograde. This view has been championed by Grumach[15] and it deserves serious consideration. It is linked with the supposition that the maker of the PD was copying an exemplar. The copy theory was invented, as I suggested earlier, to explain an imaginary problem — the fitting of the text to the disc. Even if we suppose that the inscriber was copying, why should he go backwards? Grumach suggested that he was an illiterate workman who found the method more convenient.[16] This proposal ignores an important distinction between those who write on hard substances (stone, metal) and those who write on soft ones (papyrus, clay): stonemasons are often illiterate[17] while scribes almost never are (though their knowledge may be limited and their execution poor). The stonecutter practises a slow, laborious craft in which skill with tools and materials is all-important; the scribe's task is comparatively swift but it requires understanding rather than dexterity or strength. In the case of the PD it was the making of the dies that involved a lengthy technical process, and the gifted craftsman who created them may well have been an unlettered seal manufacturer. But the imprinting probably demanded the ability to match readymade symbols to language in accordance with a complex set of conventions — in short, literacy. The stamping could have been done very rapidly, certainly far more quickly than writing out the inscription in longhand. Associated with the theory of the illiterate workman is the supposition that it is but one of a number of copies of a single text, which derives support from two very dubious

5—24. His calculations are vitiated by his inclusion of overcuts in the spiral line made by dividers or signs. If the spiral was drawn first, as most people think, intrusions upon it prove nothing about the direction of stamping. His paper does, however, contain a good argument for believing that the inscriber was right-handed.

15 Der Ägäische Schriftkreis, p. 746 (see n. 8 above). The hypothesis is rejected by G. Neumann, Zum Forschungsbestand beim 'Diskus von Phaistos', Kadmos 7, 1968, 27—44, esp. 30.

16 Die Korrekturen des Diskus von Phaistos, p. 19 (see n. 12 above).

17 Not only in antiquity. The present writer knew a very successful but totally illiterate monumental mason whose fine inscriptions adorn many churchyards. His wife wrote out the texts on scraps of paper and he copied them on stone.

sources — the modern analogy with printing, and the belief that so unusual an inscription must embody some kind of unalterable sacred text. That the writing system was designed or used merely for the repetition of a unique formula is made highly improbable by the script's obvious flexibility which is proved by the use of 45 signs to create over 50 different 'words' from two to seven signs in length. The text is certainly repetitious but that does not prove that it is religious; all sorts of other documents — accounts, calendars, laws, rolls — might exhibit similar characteristics. The uniqueness of the disc is more likely to be one of the innumerable chances of archaeological survival than the consequence of its being a rare or sacred object in its own day.

There are a few details in the arrangement of the signs which favour sinistroverse *reading* (as opposed to stamping).

i) In A19 the bow is cut by the divider which, with some awkwardness, has been carefully kept separate from the dotted line which bounds A31. The reason for this, I suggest, is that the inscriber wished to guide the decipherer from A19 to A18 and to prevent him from going from A19 to A31. A reader going from left to right would have needed no additional guidance in passing from A18 to A19 and the divider could well have been drawn straight to the top of the dotted line.

ii) In A10 the angle of the crested head may be interpreted as a guide for the sinistrograde reader which brings him into the proper path; it leads a dextrograde one into a corner.

iii) In A3 and A4 the sequence is easier for the reader going from right to left: from the rosette he passes to the crested head, whose pose encourages him to turn the disc through 90° so that he can read A3 almost as easily as if it were written in a straight line. A reader going from left to right, however, has to make an awkward upward transition from the second hide to the shield and is then going at right-angles to the line of progress.

iv) In B10 the glove is below its usual position and is inclined to the right with a corresponding stroke below (cf. A20). This gives a sinistrograde reader a hint to turn into the line of B9 but it is no help to a reader going in the other direction.

v) In B4 the breast is below its usual position and so leads the sinistrograde reader towards the crested head in B3 which is set at an angle which prompts him to turn into the new line. At this point a dextrograde reader is led into a dead end.

vi) In B2 the exceptional angle of the ship may be seen as a preparatory swing into the line of the next 'word' — B1 (though this case can be easily explained otherwise in practical and aesthetic terms).

vii) The central 'words', especially B1, have relatively large spaces on the left of the last/first sign. This may be analogous to clay tablets or bars with hieroglyphic or linear scripts on which blank portions are commonly thought to be at the end of the text.

All of these phenomena can be explained in other ways and they do not constitute a cogent argument; nevertheless they may be indications which support a hypothesis probable on other grounds: that the text of the Phaistos Disc was read, as it was written, from right to left.